

**APPENDIX D**  
**APPLICATION OF CONNELL ET AL**  
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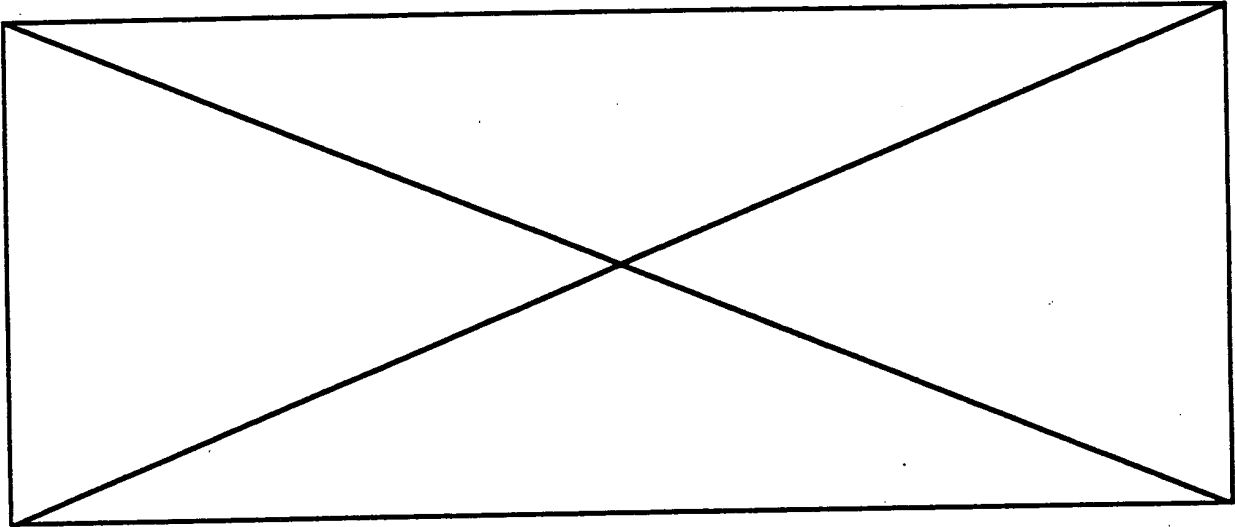
## Programming

If it necessary to program NA, HCO<sub>3</sub>, KT/V or UF during treatment

- a. Press "Menus".
- b. When the switches change on the right hand side of the monitor press "Program".
- c. When the switches change on the right hand side of the monitor, press either "Program UF", Program Na, KT/V or Program Bicarb depending on what variable is desired to be programmed.
- d. After a program for NA, HCO<sub>3</sub>, KT/V or UF has been finished and the enter key pressed the screen returns to the program screen.

### To set the programmable Sodium:

1. Press "Program Na" switch. The program Na graph and switches should appear on part of the display.



2. Press the Standard Bath Na switch. The calculator appears. Enter the sodium value displayed on the concentrate container. Press enter. calculator disappears. The sodium value will be displayed in the Standard Bath Na window.
3. If the Prescribed Time was not entered previously press the Prescribed Time switch. The calculator appears. Enter the dialysis time in hours and minutes. Press enter. calculator disappears. The dialysis time will be displayed in the Prescribed Time window.
4. The concentrate type window display the concentrate that is used, this information is based on the position of the concentrate connectors.
5. To set the variable sodium:
  - a. The operator presses the approximate place on the graph of the desired starting sodium value. The actual value entered will be displayed in the Set Na Value window.
  - b. Then the operator will press the intersection point (NA/time) on the graph for the next sodium value desired. If the operator would like the sodium to vary in steps, the same sodium value as entered in step 5a should be entered Then the new sodium value should be

entered at the same time coordinate on the graph. To view sodium values that have been previously entered roll.

6. Sodium values should be entered for as many steps as desired. It is not required to enter a step for each 20 minute sequence. If 160 were the first point selected and 140 was selected 2 hours later. The machine would vary the sodium of the dialysate slowly lowering it to 140 over the two hours. If 160 was the first value selected and 160 was pressed in the two hour time coordinate, then 140 pressed in the two hour time coordinate. The dialysate sodium value for the first two hours would be 160 and would change at the end two hour time frame to 140 where it would remain for the rest of the treatment unless another sodium value was selected. Step 5 should be repeated for all steps that the sodium should be changed to.
7. After all sodium values are entered on the machine, the enter key should be pressed and the program is set in the machine.
8. If another program or a program change is desired it can be reinput entirely or any of the values can be adjusted with the arrow keys and reentered.

**Note**

The  $\blacktriangleright$  switch will highlight the area selected. It will move one setting each time the  $\blacktriangleright$  switch is pressed. When the  $\blacktriangleright$  is pressed after the last value it will roll around back to the first value entered. *If the screen resolution permits the operator to easily adjust the set value the  $\blacktriangleright$  switch,  $\blacktriangle$  and  $\blacktriangledown$  arrow keys will not be necessary and will not be present on the display.*

**To Set the Programmable Ultrafiltration:**

1. Press "Program UF" switch. The program UF graph and switches should appear on part of the display
2. If the Prescribed Time was not entered previously press the Prescribed Time switch. The calculator appears. Enter the dialysis time in hours and minutes. Press enter. calculator disappears. The dialysis time will be displayed in the Prescribed Time window.
3. If the Target Fluid Loss was previously set the UF goal will appear in the display. If not touch the Target Fluid Loss display. The calculator appears. Enter the Target Fluid Loss in liters per hour. Press enter. The calculator disappears. The Target Fluid Loss will be displayed in the window.
5. To program the UF removal:
  - a. The operator presses the approximate place on the graph at the desired starting UF rate. The actual value entered will be displayed in the UF Rate Selected window. This value can be fine tuned with the s and t arrow keys.
  - b. Then the operator will press the intersection point (UF/time) on the graph for the next Ultrafiltration value desired. If the operator would like the UF to vary in steps, the same UF value as entered in step 5a should be entered Then the new UF value should be entered on the same time coordinate on the graph. To view UF values that have been previously input, use the  $\blacktriangleright$  arrow key to cycle through each UF rate setting.

**Note**

As the operator sets the UF values in the graph the "Prog UF" display will show add each value until the display is equal to the Target Fluid Loss.

6. Ultrafiltration values should be entered for as many steps (20 minute steps) as desired. It is not required to enter a step for each 20 minute sequence. If 1L/h were the first point selected and 0.5L/h was selected 2 hours later. The machine would control the ultrafiltration rate slowly lowering it to 0.5L/h over the two hours. If 1L/h was the first value selected and 1L/h was pressed in the two hour time coordinate, then 0.5L/h pressed in the two hour time coordinate. The ultrafiltration control rate for the first two hours would be 1L/h and would change at the end two hour time frame to 0.5 where it would remain for the rest of the treatment unless 0.5 L/h would exceed the Target UF value. Step 5 should be repeated for all the programmed UF rate changes desired.
7. After all UF rate variations are entered on the machine, the enter key should be pressed and the program is set in the machine.
8. If another program or a program change is desired it can be reinput entirely or any of the values can be adjusted with the arrow keys and reentered.

**Note**

The  $\blacklozenge$  switch will highlight the area selected. It will move one setting each time the  $\blacklozenge$  switch is pressed. When the  $\blacklozenge$  is pressed after the last value it will roll around back to the first value entered. *If the screen resolution permits the operator to easily adjust the set value the  $\blacklozenge$  switch,  $\blacktriangle$  and  $\blacktriangledown$  will not be necessary and will not be present on the display.*

9. If sequential ultrafiltration is desired:
  - a. Press the Manual switch once (while the UF program screen is on).
  - b. Press the time coordinate on the graph when you would like the machine to go into sequential ultrafiltration.
  - c. Press the manual switch once for each 20 minute interval that sequential UF is desired. A bar showing each 20 minute period should appear on the bottom of the UF graph. If the wrong time interval is selected press the manual bypass switch until it reaches the end of the Prescribed Time and the entered time value will be cleared and a new one entered.
  - d. Press enter when the setting is correct.
10. If the operator desires the Ultrafiltration to track along with the Na program. The operator should first program the Na. Then enter the UF program and press the UF Track Na switch and press enter. The machine will automatically remove at a higher UF rate when the sodium is high also.

**To Set the Programmable Bicarbonate:**

1. Press "Program Bicarb" switch. The program Bicarb graph and switches should appear on part of the display.
2. Press the Standard Bath Bicarbonate switch. The calculator appears. Enter the bicarbonate value displayed on the concentrate container. Press enter. The calculator disappears. The bicarbonate value will be displayed in the Standard Bath bicarbonate window.

3. If the Prescribed Time was not entered previously press the Prescribed Time switch. The calculator appears. Enter the dialysis time in hours and minutes. Press enter. calculator disappears. The dialysis time will be displayed in the Prescribed Time window.
4. To set the variable bicarbonate:
  - a. The operator presses the approximate place on the graph of the desired starting bicarbonate value. The actual value entered will be displayed in the Set Bicarbonate Value window. This value can be fine tuned with the s and t arrow keys.
  - b. Then the operator will press the intersection point (bicarbonate/time) on the graph for the next bicarbonate value desired. If the operator would like the bicarbonate to vary in steps, the same bicarbonate value as entered in step 4a should be entered. Then the new bicarbonate value should be entered at the same time coordinate on the graph.

To view bicarbonate values that have been previously entered use the  $\updownarrow$  arrow key to cycle through each bicarbonate setting.

**Note**

The  $\updownarrow$  switch will highlight the area selected. It will move one setting each time the  $\updownarrow$  switch is pressed. When the  $\bar{A}$  is pressed after the last value it will roll around back to the first value entered. *If the screen resolution permits the operator to easily adjust the set value the  $\updownarrow$  switch,  $\blacktriangle$  and  $\blacktriangledown$  will not be necessary and will not be present on the display.*

5. Bicarbonate values should be entered for as many steps (20 minute steps) as desired. It is not required to enter a step for each 20 minute sequence. If 35 meq/L were the first point selected and 32 was selected 2 hours later. The machine would vary the bicarbonate of the dialysate slowly lowering it to 32 over the two hours. If 35 was the first value selected and 35 was pressed in the two hour time coordinate, then 32 pressed in the two hour time coordinate. The dialysate bicarbonate value for the first two hours would be 35 and would change at the end two hour time frame to 32 where it would remain for the rest of the treatment unless another bicarbonate value was selected. Step 4 should be repeated for all steps that the bicarbonate should be changed to.
6. After all bicarbonate values are entered on the machine, the enter key should be pressed and the program is set in the machine.
7. If another program or a program change is desired it can be reinput entirely or any of the values can be adjusted with the arrow keys and reentered.